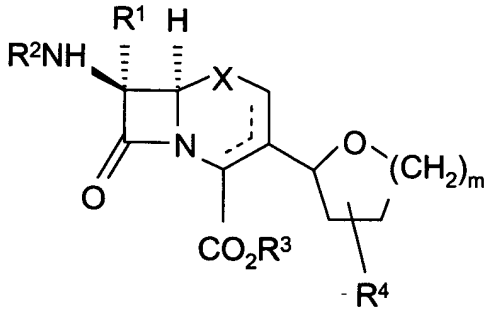
IN THE CLAIMS:

Please cancel Claims 19 and 20 without prejudice.

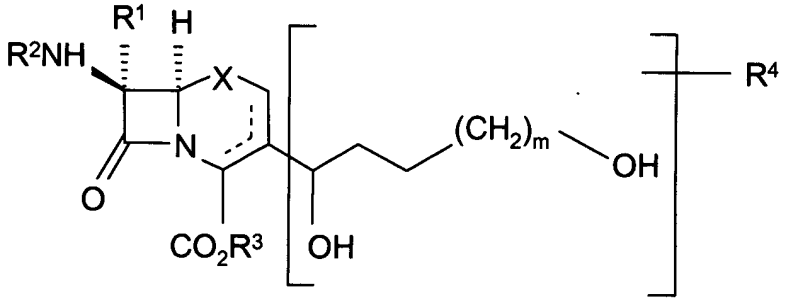
Please amend Claims 1-21 as follows:

1. (Amended) A process for the preparation of a compound of formula (II):



(II)

comprising cyclizing a compound of formula (III):



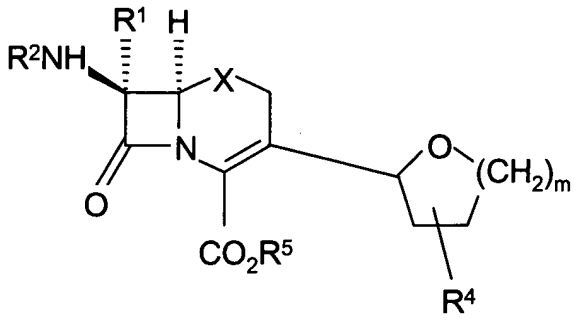
(III)

wherein in formulae (II) and (III), R^1 is hydrogen, methoxy or formamido; R^2 is an acyl group; R^3 is hydrogen or a carboxy protecting group; R^4 represents hydrogen or up to four substituents selected from alkyl, alkenyl, alkynyl, alkoxy, hydroxy, halogen, amino, alkylamino, acylamino, dialkylamino, CO_2R, $CONR_2$, SO_2NR_2 (where R is hydrogen or C_{1-6} alkyl), aryl and heterocyclyl, which may be the same or different; X is S, SO, SO_2, O, or CH_2; and m is 1 or 2; and the dotted line indicates that the compounds (II) and (III) may be a 2-cephem or a 3-cephem system, and where in formula (III) the substituent(s) R^4 when other

than hydrogen may replace any of the hydrogen atoms bonded to carbon atoms in the side chain,

and optionally forming the carboxylate salt of said compound of formula III.

2. (Amended) The process according to claim 1 wherein the compound of formula (II) is a 3-cephem of formula (IIA) or a pharmaceutically acceptable salt or pharmaceutically acceptable *in vivo* hydrolyzable ester thereof:



(IIA)

wherein R^1, R^2, R^4, m and X are as defined with respect to formula (III) and the group CO_2R^5 is CO_2R^3 where CO_2R^3 is a carboxyl group, a protected carboxyl group or a carboxylic acid salt.

3. (Amended) The process according to Claim 1 or 2 wherein X is S, O, or CH_2.

4. (Amended) The process according to Claim 1 or 2 wherein the cyclic ether at the 3-position of the cephalosporin nucleus in formulae (II) and (IIA) is unsubstituted.

5. (Amended) The process according to Claim 1 or 2 wherein m is 1, so that the cyclic ether at the 3-position in formulae (II) and (IIA) is a tetrahydrofuranyl system.

6. (Amended) The process according to Claim 5 wherein the cyclic ether at the 3-position in formulae (II) and (IIA) is an (S)-tetrahydrofuran-2-yl ring system.

7. (Amended) The process according to Claim 1 or 2 wherein in formula (III) when m is 1 the 1, 4-dihydroxylbut-1-yl side chain is the less polar diastereoisomeric form.

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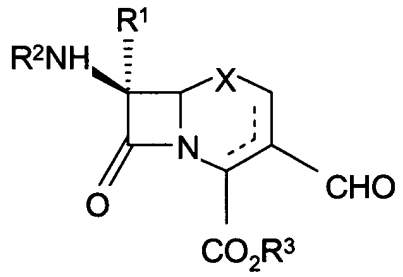
8. (Amended) The process according to Claim 1 or 2 wherein the cyclization reaction of the process of the invention is carried out by treatment of the compounds (III) with an acid catalyst.

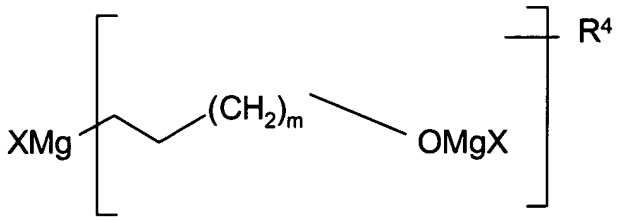
9. (Amended) The process according to Claim 1 or 2 wherein the cyclization reaction is carried out by treatment of the compounds (III) with an acylating agent.

10. (Amended) The process according to Claim 1 or 2, wherein the compound of formula (III) is prepared by reacting a compound of formula (IV):



(IV)

with a compound of formula (V):



(V)

where R^4 and m are as defined with respect to formula (III), and X and X^1 are the same or different halogen, and the dotted line in formula (IV) indicates that the compound (IV) may be a 2- or 3- cephem system.

11. (Amended) The process according to Claim 1 or 2, wherein the compound of formula III is prepared by coupling a compound of formula (IV) (as defined in claim 10) with an organometallic reagent to form a compound of formula (VIII):

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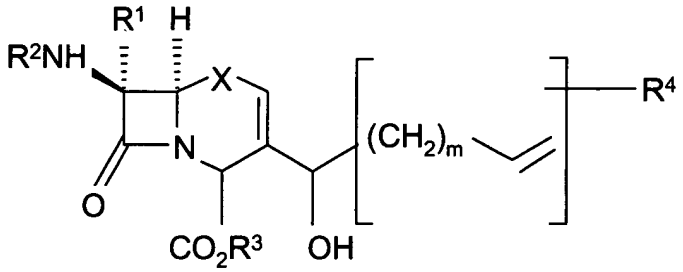
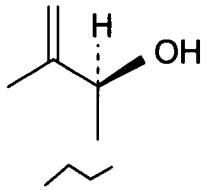


(VIII)

and wherein said compound of formula VIII is then hydroxylated to form a compound of formula III, where R^1, R^2, R^3, R^4, m, and X are as defined with respect to formula (III).

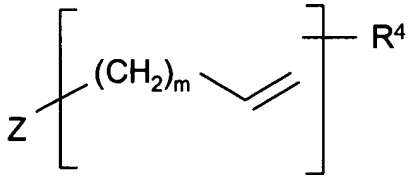
12. (Amended) The process according to claim 11 wherein the compound of formula (VIII) has the configuration shown in (VIII A):



(VIII A)

13. (Amended) The process according to Claim 12 wherein the compound of formula (IV) is formed into a compound of formula (VIII) by reaction with an organometallic reagent.

14. (Amended) The process according to claim 13 wherein the organometallic reagent is a compound of formula (IX):



(IX)

where m and R^4 are as defined in formula (VIII), and Z is YMg where Y is a halogen.

15. (Amended) The process according to Claim 12 wherein the compound of

formula (VIII) is prepared stereospecifically from a compound of formula (IV) by the use of a compound (IX):

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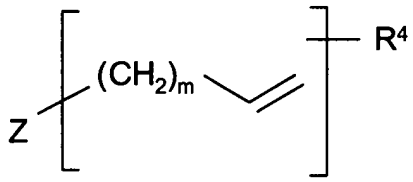
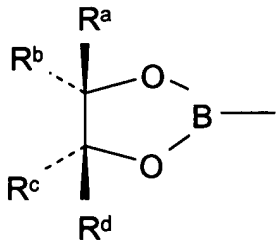


(IX)

in which Z is a chirally inducing group which leads to preferential formation of a desired configuration of the hydroxyl group in the compound (VIII).

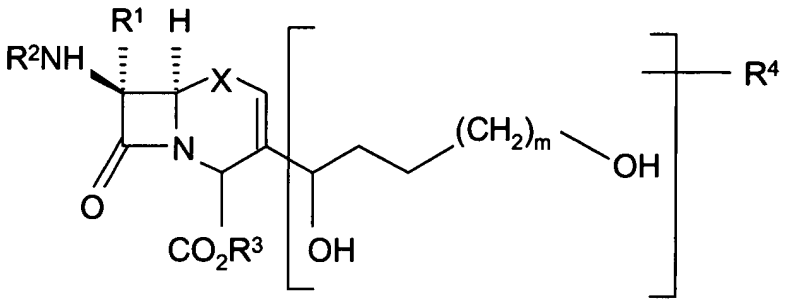
16. (Amended) The process according to Claim 15 wherein Z is the boronate group (X):



where R^a, R^b, R^c, and R^d are independently selected from hydrogen, alkyl and protected carboxy.

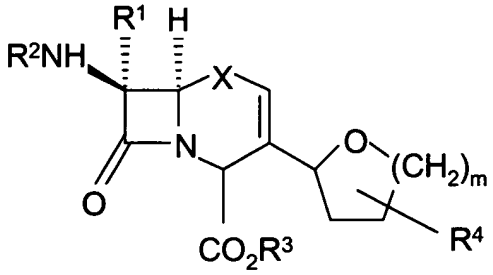
17. (Amended) The process according to claim 16 wherein group (X) is a pinacol boronate group.

18. (Amended) The process according to claim 10 wherein the compound (IV) is alkylated with a compound of formula V to form a compound of formula VIII, which is then hydroxylated to form a 2-cephem compound of formula (III A):



(III A)

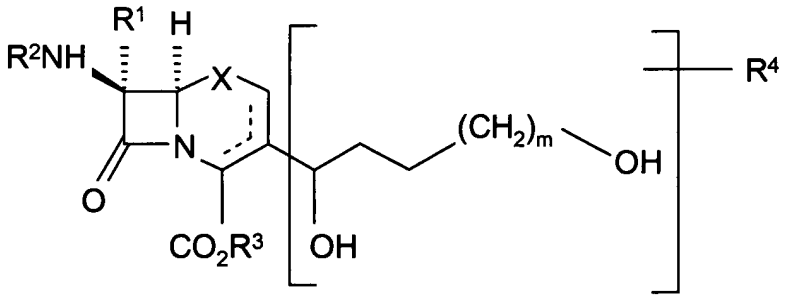
which is then cyclized to form a 2-cephem compound of formula (II B):



(II B)

where R^1, R^2, R^3, R^4, X and m are as defined in formulae (II) and (III) above, and the 2-cephem (IIB) is then converted into a 3-cephem.

21. (Amended) A compound of formula (III),



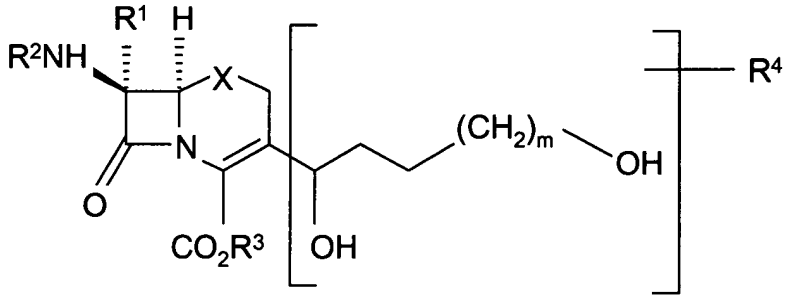
(III)

wherein R^1 is hydrogen, methoxy or formamido; R^2 is an acyl group; R^3 is hydrogen or a carboxy protecting group; R^4 represents hydrogen or up to four substituents selected from alkyl, alkenyl, alkynyl, alkoxy, hydroxy, halogen, amino, alkylamino, acylamino, dialkylamino, CO_2R, $CONR_2$, SO_2NR_2 (where R is hydrogen or C_{1-6} alkyl), aryl

and heterocyclyl, which may be the same or different; X is S, SO, SO_2, O, or CH_2; and m is 1 or 2; and the dotted line indicates that the compound may be a 2-cephem or a 3-cephem system, and where the substituent(s) R^4 when other than hydrogen may replace any of the hydrogen atoms bonded to carbon atoms in the side chain.

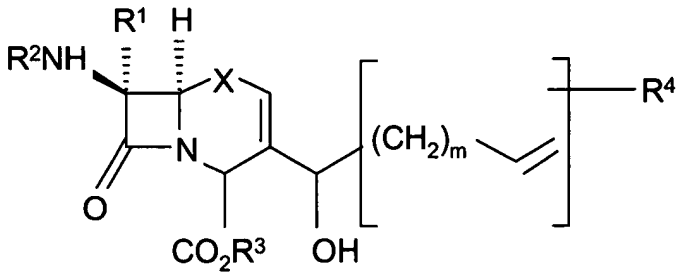
Please add Claims 22, 23, and 24 as follows:

22. (New) The compound according to Claim 21, wherein the compound is a 3-cephem system, (IIIA).



(III A)

23. (New) A compound of formula VIII, wherein R^1, R^2, R^3, R^4, and m are defined with respect to formula III.



(VIII)

24. (New) The process according to Claim 16 wherein group (X) is a tartrate boronate group wherein R^a is alkylcarboxylate, R^b is hydrogen, R^c is alkylcarboxylate and R^d is hydrogen.